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EXAMINER

DOE, J

ART UNIT

PAPER NUMBER

1753

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/331,729

Applicant(s)

OSAN et al

Examiner

J. DOTE

Group Art Unit

1753

--The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address--

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(e). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☒ Responsive to communication(s) filed on 12/12/00; 1/12/01

☒ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-15 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-15 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☒ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.

☒ received in Application No. (Series Code/Serial Number) _____

☒ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

1. The examiner acknowledges the amendments to claims 1-4, 7, and 13, and the addition of claim 15, set forth in Paper No. 7 filed Dec. 12, 2000. Claims 1-15 are pending.

2. The objection set forth in item (1) in paragraph 2 of the Office action mailed Jul. 12, 2000, Paper No. 6, has been withdrawn because the heat distortion temperature (HDT) is not a critical element. In other words, the instant claims do not require that the recited polyolefins have a particular HDT. However, if the claims are amended in the future to require that the polyolefins have a particular HDT, the objection set forth in item (1) may be reinstated, and those claims may be rejected under 35 U.S.C. 112, first and second paragraphs.

The objection set forth in item (2) in paragraph 2 of Paper No. 6 has been withdrawn in response to applicants' comments in Paper No. 7, page 7, lines 21-22. Applicants at page 7 state that "'aerosol silica' and 'colloquial [sic: colloidal] silica' are synonyms." In other words, aerosol silica is colloidal silica.

The objection set forth in item (4) with respect to the toners in Examples 1-8 and Comparative Examples 1-3 in paragraph 2 of Paper No. 6, has been withdrawn in response to applicants' comments in Paper No. 7, that the specification at page 25, lines 1-5, discloses that in "examples 1-8 . . . and

Comparative Examples 1, 2, . . . two methods for toner preparation are employed. However, the toner formulation and the resin structure are common, so that the results on evaluation items are the same." In other words, the toners made by methods 1 and 2 provide the same results.

The objections set forth in items (1) through (3) in paragraph 4 of Paper No. 6 have been withdrawn in response to the amendments to the specification at page 13, lines 1 and 8, set forth in Paper No. 7, and the amendment to claim 7.

The rejections of claims 1, 7, and 13 set forth in paragraph 7 of Paper No. 6 have been withdrawn in response to the amendments to claims 1 and 7; and applicants' comments in Paper No. 7, page 7, lines 21-22, with respect to the term "aerosol silica," as discussed supra.

3. The amendment filed Dec. 12, 2000, in Paper No. 7, is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

(1) The amendment at page 13, line 1, including "cyano groups" as a polar functional group, does not have adequate written support in the originally filed specification. The

originally specification at page 12, lines 5-13, and page 13, lines 1-2, discloses that the polyolefin having a cyclic structure can have a carboxyl, hydroxyl, or amino group. Originally filed claim 3 recites that a polyolefin resin having a cyclic structure has "at one polar functional group." The originally filed specification does not disclose that the polar function group includes "cyano groups." Applicants have not indicated where in the specification "cyano groups" are disclosed.

(2) The specification at page 31, line 8, has been amended to read, "one of the methods for introducing this crosslinked structure is to add a diene monomer, such as norbornadiene or cyclohexadiene, together with ester, amide, sulfide, ether, or acyclic olefin and the cycloolefin, followed by reacting the system, thereby obtaining a terpolymeric polyolefin having a cyclic structure" (emphasis added). The reaction of a diene monomer with ester, amide, sulfide, or ether, and cycloolefin monomer, as now disclosed in the specification, "does not have adequate written support in the originally filed specification. The originally filed specification at page 31, lines 3-10, discloses that a crosslinked structure may be introduced into the polyolefin resin having a cyclic structure by reacting a diene monomer, such as norbornadiene or cyclohexadiene, together with an acyclic olefin monomer and a cycloolefin monomer to form a

terpolymer (i.e., a terpolymer obtained from the diene, acyclic olefin, and cycloolefin monomers). Originally filed claim 7 recites that a polyolefin having a cyclic structure has a structure crosslinked by a diene, ester, amide, sulfide or ether. The originally filed specification at page 13, lines 10-32, discloses that a polyolefin having a cyclic structure can be crosslinked by the addition of a crosslinking agent, oxidation, or epoxidation. The specification further discloses that a polyolefin having a cyclic structure which has a carboxyl group can be crosslinked by the addition of a metal. Thus, there is no written description in the originally filed specification for the reaction product of a diene monomer with an ester, amide, sulfide, or ether to obtain a terpolymeric polyolefin having a cyclic structure with a crosslinked structure, now disclosed at page 13 of the specification.

Applicant is required to cancel the new matter in the reply to this Office action.

4. The disclosure is objected to because of the following informalities:

1) The specification discloses liquid toners and "liquid dried" systems that comprise an electrolytic solution. See Toner preparation methods 4 and 5 at page 17. However, the specification identifies ISOPAR H as an electrolytic solution.

ISOPAR H is known to be a non-polar hydrocarbon (i.e., isoparaffinic) liquid. See, for example, US 5,019,477, col. 6, lines 27-37. Hydrocarbon liquids are not electrolytic in the conventional meaning of the term. Thus, it is not clear what applicants mean by the term "electrolytic solution."

2) Table 1 discloses that the toners of Examples 20-30 and Comparative Examples 5 and 6 are made by Toner preparation methods 4 and 5, or which examples are made by which method. It is not clear how the examples are made by both methods 4 and 5. Method 4 is not the same as method 5.

Appropriate correction is required.

Applicants' arguments filed in Paper No. 7 have been fully considered but they are not persuasive.

(1) Applicants argue in Paper No. 7, page 8, lines 2-4, that ISOPAR H is an electrolytic solution because it has a specific conductivity of $50 \times 10^{-15} (\text{ohm}\cdot\text{cm})^{-1}$ max, as shown in Exhibit 3, the Exxon Mobil Chemical website.

Applicants' arguments are not persuasive. The term "electrolytic" is defined as "pertaining to decomposition by an electric current." See Grant & Hackh's Chemical Dictionary (Grant), 5th ed., p. 205. An "electrolyte" is defined as a substance that dissociates into two or more ions, to significant extent, in water. See Grant, p. 205. Solutions of electrolytes, "conduct an electric current, and can be decomposed by it

(electrolysis [which is defined as the separation of ions of an electrolyte])).” See Grant, 5th ed., p. 205. As set forth in the objection, ISOPAR H is a non-polar hydrocarbon isoparaffinic liquid. Even applicants’ Exhibit 3 identifies ISOPAR H as a “hydrocarbon fluid.” Applicants have not explained how a hydrocarbon compound, which only comprises C and H atoms, dissociates into ions in water. The extremely small conductivity of ISOPAR H cited by applicants proves the examiner’s contention that ISOPAR H is not an electrolytic solution.

(2) Applicants argue that the specification at page 25, lines 1-5, discloses that in “examples 1-8 and 20-30 and Comparative Examples 1, 2, 5, and 6, two methods for toner preparation are employed. However, the toner formulation and the resin structure are common, so that the results on evaluation items are the same.”

Applicants’ arguments are not persuasive. The disclosure at page 25 appears to be incorrect because the toner formulations in Toner preparation methods 4 and 5 are not the same, nor do they appear to have much in common. The formulations in the methods differ in the type of colorants and charge control agents used, and also in the amounts of the colorants, charge control agents, and binder resin used. Furthermore, the formulation of method 4 comprises aerosol silica and a wax, which are not used in the

formulation of method 5. Compare specification, page 17, lines 16-29.

5. The use of trademarks at page 16 and 17, of the specification, e.g., COPY CHARGE NX, has been noted in this application. The trademarks should be capitalized wherever they appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Applicant's arguments filed in Paper No. 7 have been fully considered but they are not persuasive. Applicants argue that appropriate corrections to the specification have been made to the trademarks. However, as set forth above, applicants' amendments set forth in Paper No. 7 did not capitalize all the trademarks disclosed in the specification.

6. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

1) The entire recitation of claim 13 lacks antecedent basis in the specification.

2) The entire recitation of claim 14 lacks antecedent basis in the specification.

Applicants' arguments filed in paper No. 7 have been fully considered but they are not persuasive. Applicants argue that they agree with the examiner's assertion concerning "liquid dried system" and conclude that claims 13 and 14 are properly supported. See Paper No. 7, page 9, lines 5-7.

However, applicants have not addressed the objection. The examiner in Paper No. 6, paragraph 5 (as set forth again infra in paragraph 7 of this office action), set forth an interpretation of the term "liquid dried system." The examiner has never stated that the subject matter recited in claims 13 and 14 has antecedent basis in the specification. Applicants have not indicated where in the specification there is antecedent basis for the entire subject matter recited in instant claims 13 and 14.

7. The instant specification, at page 16, lines 3-4, discloses that the intrinsic viscosity of the polyolefin resin having a cyclic structure is measured at 135°C for 1 g of resin uniformly dissolved in 100 ml of decalin.

The term "liquid dried system" recited in claim 13 is interpreted to refer to a liquid toner that comprises an "electrolytic solution" (which is represented by ISOPAR H, a

known non-polar hydrocarbon liquid that is not an electrolytic solution - see paragraph 4 supra) and toner particles that are obtained by a dry polymerization method, which forms toner particles by interfacial polymerization. See instant specification, Toner preparation method 4 at page 17. Applicants in Paper No. 7, page 9, lines 4-5, agree with the examiner's interpretation of the term "liquid dried system."

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 2, 4, 7, and 13-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 is indefinite in the phrase "a group of other resin consisting essentially of a polyester resin, epoxy resin . . . styrene-acrylate resin, and other acrylate resin, a mixture, hybrid polymers or blends of any of them" (emphasis added) because it is not clear whether the claim requires the entire group of resins or just one.

If applicants only intend to recite "a resin selected from the group of other resins," the phrase "a group of other resin consisting essentially of a polyester resin . . . or blends of any of them" (emphasis added) is indefinite because of improper Markush language. Proper Markush language is "R is selected from the group consisting of . . . and . . . " or "R is . . . or . . . " MPEP 2173.05(h). The language "essentially consisting of" is not closed, as is "consisting of." Thus, it is not clear whether applicants intend the recited Markush group to contain additional components. However, Markush groups must be completely specified. Only "consisting of" is permissible. The phrase is further indefinite because of the conjunction "or." Applicants are using a combination of both permissible phrases. Consequently, the scope of the instant claim is not clear.

Claim 2 is further indefinite in the right bracket "]" at line 3, because it is missing a matching left bracket "[". It is not clear what applicants intend to delete from the claim.

Claim 4 is indefinite in the phrase "selected from the group consisting essentially of a carboxyl group . . . and an amino group" (emphasis added) for improper Markush language for the reasons given supra with respect to claim 2.

Claim 7 is indefinite in the phrase "said polyolefin resin having a cyclic structure has a structure crosslinked by a diene monomer such as norbornadiene or cyclohexadiene" because a broad

range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation of indefiniteness given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), in which broad language was followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the instant application, claim 7 recites the broad recitation "a diene monomer," the linking term "such as," and the narrow limitation "norbornadiene or cyclohexadiene."

Claim 7 is further indefinite in the phrase "the polyolefin resin . . . has a structured crosslinked by a diene monomer . . . together with ester, amide, sulfide, ether, or the acyclic [sic: acyclic] olefin and the cycloolefin and followed by reacting the

system to obtain a terpolymeric polyolefin having a cyclic structure" because it is not clear what system is being reacted, e.g., the polyolefin having a cyclic structure with a diene, a cycloolefin, and an ester, amide, sulfide, ether, or an acyclic olefin, or the components without the polyolefin having the cyclic structure. Furthermore, it is not clear how the polyolefin's crosslinked structure is obtained by the formation of a terpolymeric polyolefin by reacting a diene monomer together with ester, amide, sulfide, ether or the acyclic olefin and the cycloolefin. In addition, the terms "the acyclic [sic: acyclic] olefin" and "the cycloolefin" recited in claim 7 lack antecedent basis. Instant claims 1 and 6 do not recite an acyclic olefin or a cycloolefin.

Claims 13 and 14 are indefinite in the phrase "electrolytic solution" for the reasons given in paragraph 4, item 1, supra.

Claim 13 is further indefinite in the phrase "aerosol silica or colloidal silica" because the recitation of "colloidal silica" is redundant. Applicants in Paper No. 7, page 7, lines 22-23, state that "'aerosol silica' and 'colloquial [sic] silica' are synonyms." In other words, aerosol silica is colloidal silica.

Claim 15 is indefinite in the phrase "the polyolefin resin having a cyclic structure with a high molecular weight further has a glass transition temperature of T_g of lower than 70°C" (emphasis added) for lack of unambiguous antecedent basis. It is

not clear whether the recited resin with "a high molecular weight" refers to the second resin or resin fraction having a Mn of 7,500 or more, or to another polyolefin resin having a cyclic structure recited in claim 1. Claim 1 does not recite a polyolefin resin having a cyclic structure with "a high molecular weight." Rather claim 1 recites a polyolefin having a cyclic structure comprising a first resin or first resin fraction having a Mn of less than 7,500, and a second resin or second resin fraction having a Mn of 7,500 or more, where the second resin or resin fraction is contained in a proportion of less than 50% by weight based on the binder resin.

Applicants' arguments filed in Paper No. 7 with respect to the rejections of claims 13 and 14 have been fully considered but they are not persuasive. Applicants argue that the amendments to claims 13 and 14 overcome the rejection under 35 U.S.C. 112, second paragraph.

However, claim 14 was not amended in Paper No. 7, and the amendment to claims 13 did not address the rejection with respect to "electrolytic solution." Applicants' arguments in Paper 7, page 8, lines 2-6, with respect to the correctness of term "electrolytic solution" have been addressed in paragraph 4, supra.

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claims 7 and 15 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

(1) Claim 7 recites that the polyolefin resin having a cyclic structure of claim 1 has a crosslinked structure "by a diene monomer such as norbornadiene or cyclohexadiene together with ester, amide, sulfide, ether, or the acyclic [sic: acyclic] olefin and the cycloolefin and followed by reacting the system to obtain a terpolymeric polyolefin having a cyclic structure."

(a) The originally filed specification does not provide an adequate written description of a terpolymeric polyolefin having a cyclic structure obtained by the reaction of a diene monomer with ester, amide, sulfide, or ether. The originally filed specification at page 31, lines 3-10, discloses that a crosslinked structure may be introduced into the polyolefin resin

having a cyclic structure by reacting a diene monomer, such as norbornadiene or cyclohexadiene, together with an acyclic olefin monomer and a cycloolefin monomer to form a terpolymer (i.e., a terpolymer obtained from the diene, acyclic olefin, and cycloolefin monomers). Originally filed claim 7 recites that a polyolefin having a cyclic structure has a structure crosslinked by a diene, ester, amide, sulfide or ether. Thus, there is no disclosure in the originally filed specification for reacting a diene monomer with a cycloolefin monomer and with either an ester, amide, sulfide, or ether to obtain a terpolymeric polyolefin having a cyclic structure with a crosslinked structure.

(b) The originally filed specification does not provide an adequate written description for a crosslinked structure in the polyolefin having a cyclic structure obtained by the reaction of a diene monomer with ester, amide, sulfide, or ether and a cycloolefin monomer. As discussed in item (a) above, the originally filed specification at page 31, lines 3-10, only discloses forming a crosslinked structure by reacting a diene monomer with an acyclic olefin monomer and a cycloolefin monomer. Originally filed claim 7 recites a polyolefin having a cyclic structure. Said polyolefin is crosslinked by a diene, ester amide, sulfide or ether. Furthermore, the originally filed specification at page 13, lines 10-32, discloses that a

polyolefin having a cyclic structure can be crosslinked by the addition of a crosslinking agent, oxidation, or epoxidation. The specification further discloses that a polyolefin having a cyclic structure which has a carboxyl group can be crosslinked by the addition of a metal. Thus, the originally filed specification does not disclose that the crosslinked structure is obtained by reacting a diene monomer with an ester, amide, sulfide or ether, and a cycloolefin monomer as recited in claim 7.

(2) If the phrase recited in claim 15, "polyolefin resin having a cyclic structure with "a high molecular weight" refers to the second resin or resin fraction having a Mn of 7,500 or more recited in claim 1, the originally filed specification does not provide an adequate written description of said second resin or resin fraction having a Tg of lower than 70°C as recited in claim 15. The originally filed specification at page 7, lines 3-17, discloses that a polyolefin having a cyclic structure may be a mixture of a "low-viscosity" resin and a "high-viscosity" resin. The specification discloses that the "low-viscosity" resin has a Mn of less than 7,500 and a Mw of less than 15,000; and that the "high-viscosity" resin has a Mn of 7,500 or more and a Mw of 15,000 or more. The specification discloses that it is the "low viscosity" (i.e., the lower molecular weight resin) that has a Tg of preferably lower than 70°C. See the specification, page 7, lines 5-12. Thus, the

originally filed specification does not disclose that the second resin or second resin fraction of a polyolefin resin having a cyclic structure has the Tg of lower than 70°C as recited in claim 15.

12. Claims 1, 7, and 9 are objected to because of the following informalities:

(1) Claim 1 is objected to because the second recitation of the phrase "a number average molecular weight (Mn) of 7,500 or more" is redundant. Claim 1 previously recites that the second resin or second resin fraction has a Mn of 7,500 or more.

(2) In claim 7, the typographic error "acylic" should read "acyclic."

(3) In claim 9, the misspelling "amid" should read "amide."

Appropriate correction is required.

13. As set forth in the last Office action, Paper No. 6, paragraph 8, the examiner interpreted the recitation that the polyolefin resin or resin fraction having a number average molecular weight of 7,500 or more "is contained in a proportion of less than 50 % by weight based on the entire binder resin" to read on "zero weight percent." In other words, the recited second polyolefin need not be present in the toner. This reading is consistent with the "inventive" examples of the specification.

Examples 1, 3-7, 9, 11-18, 20, and 22-29, which are labeled "inventive," comprise toners that contain only one polyolefin having a cyclic structure. Moreover, these polyolefins have a number average molecular weight of less than 7,500. They do not have the intrinsic viscosity, the number average molecular weight, and weight average molecular weight of the second resin recited in instant claim 1.

Applicants in Paper No. 7 have not stated that the examiner's interpretation is in error. Nor have they stated explicitly that the phrase "contained in a proportion of less than 50% by weight" includes 0%. However, in the prosecution history of copending US application 09/000,300, which has common inventors, applicants in that application stated that the phrase "contained in a proportion of less than 50% by weight based on the entire binder resin" according to their invention of claim 12 "can indeed be 0%." See application 09/000,300, Paper No. 11, filed Jul. 18, 2000, page 10, lines 14-17. The copending application's claim 12 recites a toner comprising a binder resin that is similar to the binder resin recited in instant claim 1. The binder resin in claim 12 "includes" a polyolefin resin having a cyclic structure recited in claim 7 and a polyolefin resin with a cyclic structure having an intrinsic viscosity of 0.25 dl/g or more, a heat distortion temperature of 70°C or higher, a Mn of 7,500 or more, and a Mw of 15,000 or more, which "is contained in

a proportion of less than 50% by weight of the entire binder resin." Given applicants' silence with respect to the examiner's interpretation of the language "less than 50% by weight" and the admission in the copending application, rejections made in view of the examiner's reading of claim 1 follow.

The term "electrolytic solution" recited in claims 13 and 14 appears to be disclosed by the instant specification to include hydrocarbon liquids, such as ISOPAR H. Thus, the rejections set forth in paragraphs 15, 18, and 19, infra, are made in view of the specification's definition of "electrolytic solution."

14. Claims 1-9, 12, and 15 are rejected under 35 U.S.C. 102(a) as being anticipated by WO 97/05529 (WO'529) as further evidenced by CAPLUS abstract AN 1994:459376 of JP 06032917.

WO'529 and the instant application have common inventors. US application 09/000,300 (US'300), filed under 35 U.S.C. 371 on May 20, 1998, is the national stage application of WO'529, and English-language translation of WO'529.

WO'529 discloses toners that meet the limitations of the instant claims. The toners comprise a binder resin, charge control agent, a colorant, and a functional imparting agent, such as HOECHST WAX E. See Toner preparation method I at page 6, and Examples 1-7 of Table 2-1 at page 7. HOECHST WAX E is identified

as a condensate of ethylene glycol with a higher aliphatic acid, which is within the scope of instant claim 9. See the CAPLUS abstract. The binder resins in Examples 1-7 are as follows:

Example 1 - polyolefin having a cyclic structure, T745, which has a Mn of 3800. See Table 3 at page 9. This binder resin meets the limitations of claims 1 and 12.

Example 2 - a mixture of polyolefin T745 and polyolefin having a cyclic structure, S-8007, which has a Mn of 35,000, Mw of 70,000, and i.v. of 0.8, in an amount of 33% by weight of the entire binder resin. See Table 3. This binder resin meets the limitations of claim 1.

Example 3 - polyolefin T745 and a polyester resin TAFTON NE21555. See Table 3. This binder resin meets the limitations of claim 2.

Example 4 - polyolefin having a cyclic structure T-745-MO, which has a Mn of 3400. See Table 3. T-745-MO is identified by the instant application at page 21 as the reaction product of T-745, a copolymer of ethylene and norborene, with a peroxide and 7% by weight, based on T-745, of maleic anhydride, which introduces carboxyl groups. This binder resin meets the limitations of claims 3 and 4.

Example 5 - mixture of polyolefin T-745-MO and polyester TAFTON NE21555. This binder resin meets the limitations of claims 2-4.

Example 6 - polyolefin having a cyclic structure T-745-CL, which has a Mn of 3400. T-745-CL is identified by the instant application at page 21 as an ionomer, which is obtained by neutralizing about 70% of the carboxyl groups of T-745-MO with zinc. The instant specification at page 13, lines 16-31, discloses that such an ionomer is a crosslinked structure. This binder resin meets the limitations of claims 5-7.

Example 7 - mixture of polyolefin T-745-CL and polyester TAFTON NE21555. This binder resin meets the limitations of claims 2 and 5-7.

WO' 529 also discloses that the polyolefin resin having a cyclic structure T745 has a Tg of 68°C, which is lower than 70°C. See Table 3. If claim 15 is interpreted to read that the polyolefin resin having "a high molecular weight" is the first resin having a Mn of less than 7,500 recited in claim 1, then WO' 529's polyolefin resin T745 meets the limitation recited in instant claim 15.

15. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO' 529.

WO' 529 discloses a liquid toner that comprises 60 wt% of an "electrolytic solution," ISOPAR H, and 40 wt% of a mixture comprising 1 part by weight of carbon black, 0.5 part by weight of a charge control agent, and 98.5 parts by weight of a binder

resin. See Toner preparation method III at page 7, and Examples 18-27 in Table 2 at page 8. The above liquid toner meets the limitations of instant claim 14, except for the amount of binder resin. However, WO'529 discloses that liquid toners can comprise 15 to 50 wt% of binder resin, 0-10 wt% of colorant, 0-5 wt% of a charge control agent, 0-10 wt% of a functioning agent, such as a wax, and 50 to 70 wt% of an electrolytic solution, based on the total weight of the liquid toner. See Table 2, page 2, and page 6, lines 5-9. The amount of binder resin is a result-effective variable, the variation of which is presumably within the skill of the ordinary worker in the art.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of WO'529, to vary the amount of the binder resin, through routine experimentation, in the liquid toner disclosed by WO'529, such that the amount would be within the range of 85 to 95 wt% recited in instant claim 14, because that person would have had a reasonable expectation of successfully obtaining a liquid toner having the properties disclosed by WO'529. See the abstract of WO'529.

16. Claim 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO'529 combined with US 5,707,772 (Akimoto).

WO'529 discloses toners which are described in paragraph 14 above, which is incorporated herein by reference. WO'529

discloses that the toners can comprise a function imparting agent. See page 6, lines 5-9.

WO'529 does not disclose that the function imparting agent is a non-polar polyolefin wax as recited in the instant claims. However, WO'529 does not limit the type of function imparting agent used. WO'529 prefers that the function imparting agent be a wax that has a melting point of 60 to 170°C. Page 6, lines 5-9. Akimoto teaches low molecular weight polyolefin waxes that have a melting point between 70 and 150°C. Col. 8, line 66, to col. 9, line 5; and releasing agents 1 to 4 in Table 1, col. 12. The polyolefin waxes are synthesized in the presence of a metallocene catalyst. Col. 11, lines 52-67. Akimoto discloses that toners that comprise said polyolefin waxes as releasing agents provide excellent images with excellent storage stability, little off-set, and "slight winding phenomena." See Toners 1 through 7 in Tables 2 and 3, and col. 16, lines 17-18.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Akimoto, to use the low molecular weight polyolefin of Akimoto as the function imparting agent in the toners disclosed by WO'529, because that person would have had a reasonable expectation of successfully obtaining toners having the advantages disclosed by Akimoto discussed above.

17. Applicants' arguments filed in Paper No. 7 with respect to the rejections over WO'529, set forth in paragraphs 14-16 above have been fully considered but they are not persuasive.

(1) Applicants argue that WO'529's toner does not anticipate the instant claimed invention for the following reasons:

(a) Applicants argue that WO'529's toner has a narrow offset-free temperature, and is unable to achieve full fixing at higher copying speeds compared to the present claimed toner. See Paper No. 7, page 11, lines 10-18.

This argument is not persuasive. As set forth in paragraph 14, WO'529's toners meet every limitation recited in instant claims 1-9, 12, and 15. Nothing more is required to anticipate those claims.

(b) Applicants argue that WO'529 does not teach or suggest every element of the instant claims. Applicants argue that WO'529 does not teach a higher molecular weight component polyolefin resin having a cyclic structure having a Tg of less than 70°C, as recited in the instant claims. See Paper No. 7, page 16, lines 8-15. Applicants argue in Paper No. 7, page 12, lines 3-8, that "the high molecular weight components of polyolefin resins having a cyclic structure and possessing a . . . Tg of lower than 70°C can be used." Applicants refer to

page 7, line 12, of the specification, and Examples 2 and 9 in Table 2, as examples of such a resin.

However, instant claims 1 through 12 do not require that the polyolefin having a cyclic structure have a Tg of lower than 70°C. Instant claim 14 does not even require a polyolefin having a cyclic structure. Claim 14 merely recites the presence of "a binder resin." Applicants cannot argue patentability based on limitations that are not present in the instant claims. Contrary to applicants, as set forth in paragraph 11 above, the specification at page 7, lines 5-12, discloses that it is the resin having a Mn of less than 7,500 that has a Tg of preferably lower than 70°C. The specification does not disclose that high molecular weight components of the polyolefin resin having a cyclic structure have a Tg of less than 70°C. (The polyolefin resins in Samples 2 and 9 in Table 2 have a Mn greater than 7,500 (i.e., 27,700 and 22,200) but have a Tg greater than or equal to 70°C, not a Tg lower than 70°C as alleged by applicants.) Furthermore, as set forth in the rejection in paragraph 15, WO'529's polyolefin resin T745 has a Tg of 68°C, which is lower than 70°C. Thus, based on the examiner's interpretation of claim 15, WO'529's toners of Examples 1 and 2, which comprise the polyolefin T745, meet the Tg limitation recited in instant claim 15.

(2) Applicants argue that the rejections of claims 10 and 11 over the combined disclosures of WO'529 and Akimoto and of claim 14 over WO'529 alone are based on impermissible hindsight, and that there is no suggestion or motivation to combine the references or to modify WO'529.

In response to applicants' argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicants' disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicants's arguments in Paper No. 7, page 17, lines 10-14, that the examiner used a "a combination of seven (7) references" to allege obviousness are baseless. There are no rejections on the present record that rely on the combination of 7 references. The rejection of claims 1-9, 12, and 15 are over WO'529, further evidenced by the CAPLUS abstract. The rejection of claim 14 is over WO'529 alone. The rejection of claims 10 and 11 are over a combination of two references, WO'529 and Akimoto.

With respect to the rejection over the combined teachings of WO'529 and Akimoto, as set forth in paragraph 16 above, Akimoto discloses the benefits of using his low molecular weight polyolefin waxes in toners. Therefore, Akimoto provides reason, suggestion, and motivation to use Akimoto's polyolefin wax as the function imparting agent in WO'529's toner.

With respect to the rejection of claim 14 over WO'529, as set forth in paragraph 15 above, WO'529 teaches a liquid toner that meets every limitation recited in claim 14, but for the amount of the binder resin. However, the amount of the binder resin appears to a result-effective variable, the variation of which is presumably within the skill of the ordinary worker in the art. Applicants have not shown that the amount of 95 wt% of the binder resin is critical, and therefore unexpected. Thus, the rejection of claim 14 stands.

(3) Applicants argue that Akimoto's polyolefin wax obtained by using a metallocene catalyst does not have a Tg of lower than 70°C. See Paper No. 7, page 12, second full paragraph.

However, instant claims 10 and 11 do not require the nonpolar wax, the function imparting agent recited in claim 1, to have a Tg of less than 70°C. Applicants cannot argue patentability based on limitations that are not recited in the instant claims.

Accordingly, for the reasons set forth in the rejections and above: (1) WO'529 anticipates the instant claimed invention recited in claims 1-9, 12, and 15; (2) the combined teachings of WO'529 and Akimoto render obvious the invention recited in claims 10 and 11; and (3) the teachings of WO'529 render obvious the invention recited in claim 14.

(4) Applicants argue that WO'529 is not prior art under 35 U.S.C. 102(a) because the toners in WO'529 are not work of others, but are the work of instant inventors Nakamura, Nishioka, Hoga, and Fukuzawa.

Applicants' arguments are not persuasive. There is no evidence on the present record to support applicants' allegation that the toners disclosed in WO'529, namely that in Examples 1-7, are not the work of others, but of Nakamura, Nishioka, Hoga, and Fukuzawa. Accordingly, WO'529 is a reference under 35 U.S.C. 102(a), and the rejections over WO'529 stand.

The examiner acknowledges applicants' filing on Jan. 12, 2001, the verified English-language translation of WO98/29783. This translation at most could "perfect" the effective filing date of the instant application, Dec. 25, 1997. The examiner notes that, under 35 U.S.C. 371, the instant application is already entitled to that date. Applicants have not provide a verified English-language translation of the Japanese priority document, Japanese Patent Application 8-348546, which, if

satisfactory, would provide the benefits of the Dec. 26, 1996 filing date.

18. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,923,778 (Blair), as further evidenced by US 5,019,477 (Felder).

Blair discloses a liquid developer that comprises toner particles and a liquid hydrocarbon in an amount of 50 to 78 wt% based on the total weight of the liquid developer. The total weight of the developer solids, i.e., toner particles, of the liquid developer is 22 to 50 wt%. Col. 4, lines 13-21. Blair exemplifies a liquid developer comprising 70 wt% of a liquid hydrocarbon. See Example 1. The toner particles comprise 80 wt% of a resin binder, 18.6 wt% of carbon black, and 5 wt% of the charge adjuvant aluminum stearate. See Example 1 at col. 9. (Felder identifies aluminum stearate as a negative charge adjuvant. Col. 8, lines 41-46.)

The amount of carbon black in the example is not within the range of 0.5 to 1.5 wt% as recited in instant claim 14. However, Blair teaches that the amount of colorant can vary from 0.1 to 30 wt% based on the weight of the toner particles. Col. 5, lines 45-47. Since the amount of carbon black determines the image density of the toner image, the amount is evidently a result-

effective variable, the variation of which is presumably within the skill of the ordinary worker in the art.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Blair, to vary the amount of carbon black, through routine experimentation, in the liquid toner disclosed by Blair, such that the amount would be within the range of 0.5 to 1.5 wt% recited in instant claim 14, because that person would have had a reasonable expectation of successfully obtaining a liquid toner that provides the desired image density.

Applicants' arguments filed in Paper No. 7 have been fully considered but they are not persuasive. Applicants argue that Blair does not disclose or suggest the liquid toner recited in claim 14, because: (1) Blair teaches the use of a thermoplastic resin, not a polyolefin resin having a cyclic structure; and (2) Blair's liquid toner uses a nonpolar liquid, not an electrolytic, "thus polar liquid" as recited in instant claim 14. See Paper No. 7, page 13, lines 1-3.

Applicants' arguments are not persuasive. Instant claim 14 does not require a binder resin comprising a polyolefin resin having a cyclic structure. Claim 14 merely recites "a binder resin." Applicants cannot argue patentability based on limitations that are not present in the instant claim.

Furthermore, as set forth in paragraph 13 above, the term

"electrolytic solution" recited in claim 14 appears to be disclosed by the instant specification to include hydrocarbon liquids, such as ISOPAR H. Blair's liquid toner uses ISOPAR L. Blair discloses that ISOPAR H and ISOPAR L are hydrocarbon liquids. Col. 3, lines 18-21. Thus, ISOPAR L is an electrolytic solution as defined in applicants' specification. Furthermore, there is no evidence on the present record that shows that ISOPAR H is a polar liquid, which applicants state is a property of electrolytic solutions. In fact, as shown by applicants' own Exhibit 3, ISOPAR H is identified by its maker Exxon/Mobil as a hydrocarbon liquid. Accordingly, the rejection of claim 14 over Blair stands.

Applicants argue that the combination of Blair and Felder is based on impermissible hindsight, and that there is no suggestion or motivation to combine the references to arrive at the instant claimed invention.

Applicants' argument that the examiner's conclusion of obviousness is based on hindsight has been addressed in paragraph 17 above, which is incorporated herein by reference.

With respect to the rejection over the combined teachings of the prior art, Felder is merely cited to show that Blair's aluminum stearate is a negative charge adjuvant. Furthermore, as set forth in rejection, Blair's liquid toner meets the limitations recited in the instant claims, but for the amount of

carbon black. However, said amount appears to a result-effective variable, the variation of which is presumably within the skill of the ordinary worker in the art. Applicants have not shown that the amount of 1.5 wt% of carbon black is critical, and therefore unexpected. Accordingly, the rejection stands.

19. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,843,613 (Fujiwara), as further evidenced by ACS File Registry No. RN 64365-06-6, combined with Felder and US 4,659,640 (Santilli).

Fujiwara discloses a liquid developer that comprises negatively charged toner particles and a liquid hydrocarbon carrier, IP SOLVENT 1620, which comprises a basic dispersion resin. Col. 2, lines 54-56; col. 7, lines 11-27, and Example 27. (IP SOLVENT 1620 is identified as an isoparaffin liquid. See the File Registry No. RN 64365-06-6.) The toner particles comprise 82 wt% of a polyester binder resin, 16.4 wt% of carbon black, and 1.6 wt% of silica (R-974: Nippon-Aerosil). See Example 27. Fujiwara discloses that such a liquid toner has excellent charging characteristics, and provides toner images that have excellent image density and resolution. Col. 2, lines 1-16, and Example 27 in Table 2 at col. 20.

The exemplified amounts of binder resin and carbon black and the concentration of toner particles are not within the ranges

recited in claim 13. However, Fujiwara discloses that the concentration of the toner particles relative to the liquid carrier can vary from 0.5 to 50 wt% depending on developing speed, image fog, and the like. Col. 7, lines 28-35. In other words, the concentration of the toner particles in the liquid developer determines the developing speed and image fog.

Fujiwara's toner particle concentration overlaps the toner particle concentration range of 30 to 50 wt% recited in instant claim 13. Fujiwara further discloses that the amount of carbon black is typically in the range of 3 to 30 parts by weight relative to 100 parts by weight of resin binder. Col. 4, lines 46-48. The weight percentage of binder resin relative to the weight of the toner will vary inversely with the amount of carbon black, if other components remain constant. The amount of carbon black determines the image density of the toner image. Said typical amount of carbon black overlaps the instantly recited range of 1 to 10 wt%. Thus, the amount of carbon black and the concentration of the toner particles are result-effective variables, the variation of which are presumably within the skill of the ordinary worker in the art.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Fujiwara, to vary the amounts of carbon black and binder resin, and the concentration of the toner particles, through routine

experimentation, in the liquid toner disclosed by Fujiwara, such that the amounts of the components would be within the ranges recited in instant claim 13, because that person would have had a reasonable expectation of successfully obtaining a liquid toner having the benefits disclosed by Fujiwara.

Fujiwara does not disclose that the toner particles further comprise a wax and a charge control agent as recited in claim 13. However, Fujiwara discloses that the toner particles can comprise various types of additive agents necessary in resin microparticles. Col. 3, lines 51-53.

Felder discloses that a negative charge adjuvant, such as a metallic soap, can be dispersed in the toner particles to increase the negative charge of the toner particles. Col. 8, lines 43-45 and 53-54. Felder discloses that increasing the toner charge increases the mobility and transfer latitude of the toner particles. Col. 8, lines 41-43. Felder discloses that increased mobility and toner charge yield satisfactory toner images. See Tables I and II. Felder discloses that the negative charge adjuvant can be added in an amount of about 1 mg/g to about 100 mg/g of toner particles (0.1 to 10 wt%). Col. 8, lines 46-47, 53-54, and 56-60.

It would have been obvious to a person having ordinary skill in the art, in view of the teachings of Felder, to add a negative charge adjuvant in an amount that is within the scope of the

instant claim to the liquid toner rendered obvious over the teachings of Fujiwara, because that person would have had a reasonable expectation of successfully obtaining a liquid toner wherein the toner particles have increased mobility and transfer latitude, thereby proving satisfactory toner images.

Santilli teaches that a liquid toner can comprise toner particles that comprise a wax in combination with a polyester binder resin. Col. 2, lines 2-6. Santilli discloses that the liquid developer self-fixes to smooth surfaces at room temperature. Col. 1, lines 7-11. In order for the liquid developer to be self-fixing, Santilli discloses that the wax should be present in a concentration to provide self-fixing (i.e., above 0.25 part by weight of the binder resin). However, Santilli further discloses that the wax can be present at a somewhat lower concentration so long as the amount provides a self-fixing developer. Col. 2, lines 11-18. Santilli discloses that the skilled artisan will appreciate that some routine effort may be necessary to establish the amount of a specific wax at which self-fixing commences. Col. 3, lines 55-58. In particular, Santilli shows that a liquid developer that comprises toner particles comprising 1 part by weight of a polyester binder resin and carnauba wax in a concentration of 0.125 parts by weight, is self-fixing. See Table 1, example 10.

It would have been obvious to a person having ordinary skill in the art, in view of the teachings of Santilli, to add a wax, and to vary the amount of the wax, through routine experimentation, such that the amount is within the range recited in instant claim 13, to the liquid toner rendered obvious over the combined teachings of Fujiwara and Felder, because that person would have had a reasonable expectation of successfully obtaining a liquid toner that is self-fixing as defined by Santilli.

Instant claim 13 recites "a dried polymerized system." This means the toner particles are made by a "dried polymerization method." This claim is written in product-by-process format. The toner particles in the liquid toner exemplified in Example 27 of Fujiwara are not made by the dried polymerization method recited in the instant claims. However, Fujiwara discloses that his toner particles can also be obtained by conventional emulsion polymerization methods. Col. 3, lines 54-55 and 58. Because the toner particles rendered obvious over the combined teachings of Fujiwara, Felder, and Santilli meet the compositional limitations of the instant claims, and are used for the same purpose as applicants, as toner particles in a liquid toner, it appears that toner particles rendered obvious over the cited prior art are the same or substantially the same as those made by the process recited in the instant claim. The burden is on applicants to

prove otherwise. In re Marosi, 218 USPQ 289 (Fed. Cir. 1983); In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985); MPEP 2113.

Applicants' arguments filed in Paper No. 7 have been fully considered but they are not persuasive.

Applicants argue that the combination of the references do not teach or suggest the instant claimed invention recited in claim 14 because none of the references, Felder, Fujiwara, ACS File Registry No. RN 64365-06-6, and Santilli, teaches or suggests a polyolefin resin having a cyclic structure, especially one having a Tg of less than 70°C, with a polar liquid as recited in instant claim 13.

However, claim 14 does not require a binder resin comprising a polyolefin resin having a cyclic structure, let alone one that has a Tg of less than 70°C. Claim 14 merely recites "a binder resin." Applicants cannot argue patentability based on limitations that are not present in the instant claim. Furthermore, as set forth in paragraph 13 above, the term "electrolytic solution" recited in claim 13 the appears to be disclosed by the instant specification to include hydrocarbon liquids, such as ISOPAR H. Applicants maintain on this record that such liquids are polar. Fujiwara's exemplified liquid developer uses IP SOLVENT 1620. Fujiwara discloses at col. 7, lines 23-27, that IP SOLVENT 1620, ISOPAR G, and ISOPAR H are isoparaffin (hydrocarbon) solvents. As shown by applicants' own

Exhibit 3, ISOPAR H is identified by its maker Exxon/Mobil as a hydrocarbon liquid. Thus, the hydrocarbon liquids disclosed by the references are electrolytic solutions as defined in applicants' specification. Accordingly, the rejection of claim 13 stands.

Applicants argue that the combination of the references is based on impermissible hindsight, and that there is no suggestion or motivation to combine the references to arrive at the instant claimed invention.

Applicants' argument that the examiner's conclusion of obviousness is based on hindsight has been addressed in paragraph 17 above, which is incorporated herein by reference.

With respect to the rejection over the combined teachings of the prior art, as set forth in rejection, Felder discloses the benefits of using a negative charge adjuvant in a liquid developer. Santilli teaches the benefits of using a wax in a liquid developer. Therefore, Felder and Santilli each provides reason, suggestion, and motivation to use their respective component in Fujiwara's liquid developer. Accordingly, the rejection of claim 14 stands.

20. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS

ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (703) 308-3625.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Nam Nguyen, can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3599 for after final faxes, and (703) 305-7718 for other official faxes.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JLD
February 18, 2001


JANIS L. DOTE
PRIMARY EXAMINER
GROUP 1500
1700